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EXAMINER

CADUGAN, ERICA E

ART UNIT PAPER NUMBER

3722

DATE MAILED: 11/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/829,604

Applicant(s)

HARTMAN, DAVID

Examiner

Erica E. Cadugan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) 10 and 11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 April 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>4/22/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. This application contains claims directed to the following patentably distinct species of the claimed invention: the species of Figures 1-6 and the species of Figures 7-8.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, at least claims 1-3 are generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

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2. During a telephone conversation with Robert C. Brown (Reg. No. 37,057) on October 31, 2005 a provisional election was made without traverse to prosecute the invention of the species of Figures 1-6, claims 1-9 reading thereon. Affirmation of this election must be made by applicant in replying to this Office action. Claims 10-11 are thus withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Specification

3. The abstract of the disclosure is objected to because it contains legalese such as “means” or “said”. Correction is required. See MPEP § 608.01(b).

4. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: claim 3 sets forth that the central aperture has a diameter of between about “0.0001 inch and about 0.0003 inch less than said diameter of said shank portion”. However, the specification does not provide antecedent basis for this range.

Similarly, the specification does not provide antecedent basis for the limitation “said end portion includes a threaded aperture extending axially therethrough for receiving an extension member to facilitate the mounting of said tool holder to a rotatable spindle of a milling machine, said central aperture and said threaded aperture being coaxially aligned within said tool holder” of claim 4.

Drawings

5. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “threaded aperture extending

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axially” through some “end portion” of claim 4, as well as the “extension member” of claim 4, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 2-5 and 7-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 2, it is unclear as claimed, via the use of the indefinite article “a” whether “a...tool” is a different tool than the “tool” previously set forth in claim 1. If the limitation “a cutting tool” in claim 2 is intended to be the same tool (just further limited via the “cutting” limitation) as the tool of claim 1, then Examiner suggests utilizing language such as --wherein the tool is a cutting tool-- instead of just reciting “a cutting tool” as in claim 2, line 3. Note that a similar situation exists in claim 2, line 6 with the limitation “a unitary tool holder” as a “tool holder” was already previously set forth in claim 1.

There is no axis/axes or frame of reference provided for determining what is meant by “axially” in claims 2 and 4, “axial” in claim 2, “coaxially aligned” in claim 4.

The term "high centration" in claim 2 is a relative term which renders the claim indefinite. The term "high centration" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

In both claims 4 and 5, lines 1-2 of each of these claims, the term “said end portion” lacks sufficient antecedent basis in the claim. Note that it is further unclear to what the claimed “end portion” belongs, i.e., the end portion of what?

In claim 7, “the axis” lacks sufficient antecedent basis in the claim. Note that it is not inherent that the tool has only a single axis. Examiner suggests providing a “longitudinal axis” of the tool, for example.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-2 and 5, those of which were rejected under 35 USC 112 above are as best understood, are rejected under 35 U.S.C. 102(b) as being anticipated by PCT WO 2001/45883 ('883).

Re claim 1, see Figures 1, 3A-11B, and 13A and B, and also page 5, line 6 through at least page 7, line 20, and especially page 7, lines 15-20, where the shrink-fit holding of a tool 23 within a tool holder 21 is described, and wherein additional mechanical structure that would prevent the tool from rotating in the tool holder is described, such as set screws and pins (page 7, lines 15-20, especially). Note also that the polygonal engagement shown in Figures 8A-11B and described on page 12, line 4 through page 13, line 6, for example, would also function to prevent relative rotation of the tool and holder.

Re claim 2, note that the cutting tool 23 has a cylindrical shank portion 27, and that tool holder 21 has a conical tapered end portion at an upper end thereof (as viewed in Figure 1, for example) and a central aperture 35 in mounting portion 33 (see Figures 1-11B, for example). Note that the diameter of the aperture 35 (absent the cutting tool) is less than the diameter of the shank portion 27 until heated (see page 2, line 17 through page 3, line 4).

Re claim 5, note that '883 explicitly teaches that the tool is a rotary tool, and provides an end mill as an example (page 5, lines 12-15) thereof. Thus, it is considered inherent that the tool holder 21 shown in the Figures and described on page 5, lines 9-11, for example, must be attached to some sort of spindle device in order for the tool to be rotated to function as an end

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mill and perform a milling operation. Additionally, note that if the tool holder weren't "releasable", there would be no need to provide a separate tool holder such as 21.

10. Claims 1 and 6-8, those of which were rejected under 35 USC 112 above are as best understood, are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Pat. No. 6,394,466 to Matsumoto et al.

Matsumoto teaches a tool clamping arrangement wherein a shank 30c of an end mill 30 is shrink fitted into an aperture 34b of a tool holder (see Figures 18A-C, for example, and also see col. 12, lines 13-19, for example). Additionally, note that set screw 51 engages a flat portion 53 of the shank 30c to prevent relative rotation between the shank 30c and the holder (see Figures 18A-C and col. 12, lines 13-19).

Re claims 7-8, as broadly claimed, note that the tool has an infinite number of "axes" that intersect or pass through the tool, and thus, there inherently exists an "axis" of the tool that is at about a 5 degree angle to the flat 53.

(Re claim 7, note for example that the flat is "at an angle" to a horizontal axis through the tool, horizontal being as viewed in Figure 18A, for example).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claim 3, as best understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over WO 2001/45883 ('883) as applied to claims 1 and 2 above.

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'883 teaches all aspects of the claimed invention as described above, and while '883 does explicitly teach that the diameter of the aperture is less than the diameter of the shank as described previously, '883 is silent as to the specific dimensions of aperture and the shank, and thus does not explicitly teach that the aperture diameter is between 0.0001 and 0.0003 inches less than the shank diameter as set forth in claim 3.

However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have made the difference between the shank and the aperture whatever amount was desired or expedient to an end user to achieve the desired degree of clamping, such as between 0.0001 and 0.0003 inches different, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

13. Claims 4 and 6-9, any of which were rejected under 35 U.S.C. 103(a) as being unpatentable over '883 as applied to claims 1-3 above, and further in view of U.S. Pat. No. 5,582,494 to Cook.

'883 teaches all aspects of the claimed invention as described above. Additionally, re claim 4, it is noted that '883 explicitly teaches that the tool is a rotating tool (page 5, lines 12-15, for example), and provides an end mill as an example (page 5, lines 12-15) thereof, and thus it is considered inherent that the tool holder 21 must be attached to some sort of spindle device in order for the tool to be rotated. to function as an end mill and perform a milling operation. Additionally, note that if the tool holder weren't "releasable", there would be no need to provide a separate tool holder such as 21

However, while '883 does show the conical tool holder 21 (see Figure 1, for example, also page 5, lines 9-11), '883 is silent as to how the spindle holds the tool, and thus, '883 does not explicitly teach the end portion including a threaded axial aperture for receiving an extension member to facilitate the mounting of the tool holder to the rotatable spindle of a milling machine as set forth in claim 4.

Additionally, re claims 6-8, while '883 does generically teach that a "set screw" can be added to the tool holder 21 and/or the shank 27 to provide extra holding force over the shrink fit alone (page 7, lines 15-20), '883 doesn't explicitly show an embodiment with such a set screw, and thus doesn't teach the configuration of the sets screw engaging the flat as set forth in claims 6-8.

Also, re claim 9, '883 doesn't teach the second flat and set screw.

However, Cook teaches a tool holder 10 having a tool bit 90 held thereby, and also having a conical portion 12 mounted in a spindle 22 (i.e., Cook teaches a tool holder of a similar configuration to that of the present invention). Re claim 4, Cook explicitly shows a threaded aperture 30 located at an end portion of the tool holder 10, which aperture receives an extension member 40 to facilitate the mounting of the tool holder 10 to the spindle 22 (noting that the retention knob 46 of the extension member 40 is gripped by tool holder retention members 50, see Figures 1-2, for example).

Re claims 6-9, see Figure 8, noting that the tool shank includes a flat 98, and also includes a flat 122 that is inclined with respect to the longitudinal axis of the tool bit. Note also that flat 98 is engaged by set screw 28 and that flat 122 is engaged by set screw 120.

Specifically re claim 8, it appears, as shown in Figure 8, that the angle of inclination is “about five degrees” as claimed.

Therefore, re claim 4, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided the threaded aperture 30 and extension member taught by Cook to the end of the tool holder taught by ‘883 for the purpose of providing a way to securely grip the tool holder by the spindle, as would be readily apparent and understood by one having ordinary skill in the art, and also for the purpose of facilitating the use of the tool holder taught by ‘883 with automatic tool changer systems as taught by Cook (see Cook, col. 4, lines 40-44, for example).

Also, re claims 6-9, Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have substituted the explicitly-taught set-screws and flats used to mechanically prevent the tool bit from rotating with respect to the tool holder as taught by Cook for the generic “set screw” taught by ‘883 for the purpose of providing such a set screw arrangement that prevents backing out of the cutting tool from the tool holder during the machining operation (Cook, col. 2, line 65 through col. 3, line 6).

Alternatively, re claim 8, while Cook does not explicitly set forth the value of the angle of inclination of the flat, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have made the angle any value that was desired or expedient to the end user, such as about five degrees, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. For example, it is noted that U.S. Pat. No. 5,150,636 to Hill teaches the provision of mechanical elements such as a mating non-circular portions, or such as keyways or dowelways, can be provided to a shrink fit tool holder to provide additional security against relative rotation against the parts (see col. 1, lines 46-50 and col. 2, line 63 through col. 3, line 2, for example). Also, US 6488456, US 6340274, and US 182178 teach heat shrink-type tool holders with relative rotation prevention devices. Note that US 2002/009342 teaches a shrink fit with a polygonal shaft, which polygonal shaft would serve to prevent relative rotation.


15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erica E. Cadugan whose telephone number is (571) 272-4474. The examiner can normally be reached on M-F, 6:30 a.m. to 4:00 p.m., alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Boyer D. Ashley can be reached on (571) 272-4502. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR

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system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Erica E Cadogan
Primary Examiner
Art Unit 3722

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